

Department of Water Resources'
Water Use Efficiency Program

Consolidated Water Use Efficiency
2002 Proposal

Implementation of
Best Management Practices
and Water Use Efficiency
Baseline Survey

Submitted by:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

March 1, 2002

Consolidated Water Use Efficiency 2002 PSP

Proposal Part One:

A. Project Information Form

1. Applying for (select one):
- ☐ (a) Prop 13 Urban Water Conservation Capital Outlay Grant
- ☐ (b) Prop 13 Agricultural Water Conservation Capital Outlay Feasibility Study Grant
- ☒ (c) DWR Water Use Efficiency Project
2. Principal applicant (Organization or affiliation): Santa Clara Valley Water District
3. Project Title: Implementation of Best Management Practices and Water Use Efficiency Baseline Survey
4. Person authorized to sign and submit proposal:
- | | |
|-----------------|---|
| Name, title | Hossein Ashktorab, Ph.D., |
| Mailing address | Unit Manager, Water Use Efficiency Unit |
| Telephone | (408) 265-2607, ext. 2291 |
| Fax. | (408) 978-0156 |
| E-mail | hashktorab@valleywater.org |
5. Contact person (if different):
- | | |
|------------------|--|
| Name, title. | |
| Mailing address. | |
| Telephone | |
| Fax. | |
| E-mail | |
6. Funds requested (dollar amount): \$317,099
7. Applicant funds pledged (dollar amount): \$317,099
8. Total project costs (dollar amount): \$634,198
9. Estimated total quantifiable project benefits (dollar amount): \$115,685
- Percentage of benefit to be accrued by applicant: 100%
- Percentage of benefit to be accrued by CALFED or others: 0%

10. Estimated annual amount of water to be saved (acre-feet): **14.1**
- Estimated total amount of water to be saved (acre-feet): **282**
- Over ____ years **20**
- Estimated benefits to be realized in terms of water quality, instream flow, other: **na**
11. Duration of project (month/year to month/year): **June 2002 to June 2003**
12. State Assembly District where the project is to be conducted: **20,21,22,23,24,27, & 28**
13. State Senate District where the project is to be conducted: **10,11,13, & 15**
14. Congressional district(s) where the project is to be conducted: **14,15,16, & 17**
15. County where the project is to be conducted: **Santa Clara County**
16. Date most recent Urban Water Management Plan submitted to the Department of Water Resources: **2001**
17. Type of applicant (select one):
 Prop 13 Urban Grants and Prop 13 Agricultural Feasibility Study Grants:
- ☐ (a) city
☐ (b) county
☐ (c) city and county
☐ (d) joint power authority
☒ (e) other political subdivision of the State, including public water district
☐ (f) incorporated mutual water company
- DWR WUE Projects: the above entities (a) through (f) or:
- ☐ (g) investor-owned utility
☐ (h) non-profit organization
☐ (i) tribe
☐ (j) university
☐ (k) state agency
☐ (l) federal agency
18. Project focus:
- ☒ (a) agricultural
☒ (b) urban
19. Project type (select one):
 Prop 13 Urban Grant or Prop 13 Agricultural Feasibility Study Grant capital outlay project related to:
- ☐ (a) implementation of Urban Best Management Practices
☐ (b) implementation of Agricultural Efficient Water Management Practices
☐ (c) implementation of Quantifiable

Objectives (include QO number(s))

☐ (d) other (specify)

DWR WUE Project related to:

- ☒ (e) implementation of Urban Best Management Practices
- ☐ (f) implementation of Agricultural Efficient Water Management Practices
- ☐ (g) implementation of Quantifiable Objectives (include QO number(s))
- ☐ (h) innovative projects (initial investigation of new technologies, methodologies, approaches, or institutional frameworks)
- ☒ (i) research or pilot projects
- ☐ (j) education or public information programs
- ☐ (k) other (specify)

20. Do the actions in this proposal involve physical changes in land use, or potential future changes in land use?
- ☐ (a) yes
- ☒ (b) no

Consolidated Water Use Efficiency 2002 PSP Proposal Part One

B. Signature Page

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form is authorized to submit the proposal on behalf of the applicant;
and

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant.

Signature

Name and title

Date

Proposal Part Two

Project Summary

The Santa Clara Valley Water District (District) has been very committed to water conservation programs since 1992. They have developed a comprehensive conservation program that includes all 14 of the Best Management Practices (BMPs) set forth in the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU). By the year 2020, the District expects to save more than 52,000 acre-feet (ac-ft) per year from its conservation efforts. This Water Use Efficiency Baseline Survey is a critical step in the District's overall conservation plan and comes at an important juncture in their long-term program. This project is necessary to determine specifically where the District has been successful in implementing conservation measures over the past decade and how best to continue the program into the future.

This project will provide the specific information needed to tailor the District's water use efficiency program to result in effective long-term water use efficiency, to evaluate the impacts of water efficiency measures, and further promote and implement BMPs. These objectives cannot be met without adequate knowledge about how customers are currently using water in the Santa Clara Valley. The knowledge of baseline conditions of the service area, with respect to water-using hardware, water-using behaviors, and conservation attitudes, will provide the District with information to design the most cost-effective conservation programs and provide feedback regarding ongoing conservation efforts. Through this project, the District will collect and analyze data on customer water end uses and at the same time distribute water saving devices, incentives, and education to hundreds of District customers.

A. Scope of Work: Relevance and Importance

1. Nature, scope, and objectives of the project.

This project is designed to collect and analyze data on water end uses in both the residential and non-residential sectors of the Santa Clara Valley Water District and concurrently distribute water saving devices to both residential and non-residential survey participants. The District is the primary wholesale water supplier for Santa Clara County. The District enjoys a special cooperative partnership with the water retailers in regional implementation of the BMPs and will use this positive relationship to aid in the development and implementation of this project.

Two methods of data collection will be used in this project: site surveys and data logging of end uses. Residential survey data will be collected through site surveys and will verify correlation with results of other water use baseline surveys such as those performed in the City of San Jose. Non-residential survey data will also be gathered through site surveys and data logging of end uses.

Residential surveys will be focused on a random sample group of single-family households. At the time of the survey, incentives will be introduced to induce future participation in conservation programs such as the high efficiency washing machine rebate program (BMP 6) and Ultra Low Flow Toilet (ULFT) program (BMP 14). In addition, water conserving devices such as showerheads, aerators, displacement devices and toilet flappers can be distributed to all survey participants (BMP 2).

Non-residential surveys will be focused on Commercial, Industrial, Institutional (CII) accounts, large landscape (LL) accounts, and agricultural (Ag) accounts. Surveys for CII accounts will provide water use data according to CII classification. At the time of the CII surveys, incentives will be introduced for participation in the ULFT program (BMP 9). Surveys of large landscape and agricultural accounts will be focused on high-end water users. High-end water users are defined as those using greater than 100 percent of ETo, annually, on a use per acre basis.

This project will meet the following objectives: (1) Implement BMPs 1, 2, 6, 9, and 14 by both residential and CII customers; (2) Develop an accurate assessment of the success of the District's Water Conservation Program; (3) Determine the types and saturation of water-using hardware that exists for selected types of customers; (4) Establish a baseline from which future water savings are measured for both residential and non-residential sectors (incorporating Residential Water Use Baseline Study findings conducted by the City of San Jose, the East Bay Municipal Utility District, and the Marin Municipal Water District); (5) Assess customer attitudes and awareness for additional water conservation; (6) Determine areas where future conservation programs would be most effective; and (7) Introduce water saving devices and programs to survey participants.

2. Statement of Critical Issues

By the year 2020, the District could experience a water supply shortage of 100,000 ac-ft based on current supplies, projected growth and likely dry periods (ref.: SCVWD, Integrated Water Resources Plan, Implementation Plan, 1999). As a result of this projected shortfall of water supply, the District has developed the *Integrated Water Resources Plan, Preferred Strategy* (IWRP). This is a flexible, long-term, overall water supply plan for Santa Clara County through the year 2020. The Preferred Strategy includes core elements that consist of existing water supplies and baseline activities designed to increase water supply reliability. *Water conservation is one of the four key components of this Strategy.* The strategy outlines demand management measures to achieve 52,000 acre-feet of annual water conservation.

Currently, the District has a water conservation program developed in large part to comply with the BMP commitments, as defined in the 1991 MOU. The program targets residential, commercial/industrial, large landscape, and agricultural water use. The District has currently gone above and beyond what is traditionally expected from a wholesale water agency in implementation of the BMPs to the point of including all 14 BMPs in their program. Several program elements have been developed in partnership with local retail water suppliers and the City of San Jose. The District has shown steadfast commitment to water use efficiency that demonstrates that funding for water use efficiency will yield success, i.e., implemented BMPs.

Benefit to the Bay Delta and Local Watershed. The water conserved as a result of this project will have a direct beneficial impact on the San Francisco Bay Delta. On average, approximately 50% of the water used by the District comes from the Delta. In dry years, Delta imports can reach as high as 90%. Any water conserved will remain in the Delta for beneficial in-stream uses including endangered and threatened fisheries and other ecosystem benefits.

Water conserved as a direct and indirect result of this project will augment flows for spawning and endangered species in the local watershed. This water conservation project is consistent with implementing creek and bay ecosystem protection as set forth in the District's 15-year plan to preserve and protect the quality of life in the Santa Clara Basin and to promote clean, safe creeks and natural flood protection (ref.: SCVWD, Clean, Safe Creeks and Natural Flood Protection, 2000).

The District has significant large landscape and agricultural water users. Increased water use efficiency at these user sites will improve surface and groundwater quality by decreasing non-point source pollution from excess runoff containing fertilizers and pesticides.

A testimony to the benefit that this project will have on the local watershed is the support of the Santa Clara Basin Watershed Management Initiative (WMI). Appendix IV includes a copy of their letter of support. The WMI is a major collaborative stakeholder effort that began in 1996. This project will directly benefit the WMI mission by improving water management resulting in improved water quality in the Santa Clara Basin. Increases in water use efficiency will reduce polluted runoff from urban and rural sources thereby reducing pollution to urban creeks and the Bay.

Importance to the California Economic Health. The Silicon Valley, which lies within the District service area, is a major contributor to the California economy and still poised for growth despite some forecasts of a slowing economy. Future water demands are expected to increase by over 10 percent from 2000 through 2020 (ref.: SCVWD, Urban Water Management Plan, 2001). The importance of a healthy Silicon Valley economy is underscored by the fact that the economic output of just one high tech business (Hewlett Packard) in the valley is \$10 billion over just a two-week period. This is equivalent to the economic output over an entire year from all of California's agricultural business. The District's water use efficiency program is a critical element of its overall water supply reliability plan to assure water supplies to Silicon Valley businesses.

High Chance for Success. The people of the Silicon Valley are a very open community to preservation of the quality of life in the Santa Clara Valley. The high-tech community is open to adopting water conservation programs and behaviors, as shown through involvement in studies and programs regarding rinse optimization for reduction of point-of-use ultrapure water consumption in high technology manufacturing (ref.: Chiarello, Ronald P., Rinse Optimization for Reduction of Point-of-Use Ultrapure Water Consumption In High Technology Manufacturing, 2000). Openness to water conservation within the Silicon Valley is also displayed through organizations such as the Joint Venture Silicon Valley, which sets goals with progress measures for the livable environment (www.jointventure.org). One goal is specifically focused on conserving natural resources through conservation of overall water use and recycled water. Through involvement in these types of activities, the community within the District has shown they are willing to implement water conservation practices in order to save money and preserve the environment. Because the Santa Clara Valley community is receptive to life style changes to protect the quality of life, there is a high chance of success that the water use efficiency measures that result from this project will be implemented.

B. Scope of Work: Technical/Scientific Merit, Feasibility, Monitoring and Assessment

B.1 Methods, Procedures, and Facilities

The following tasks provide information to permit evaluation of the technical adequacy of the approach to satisfy the objectives by outlining a step-by-step approach for implementing BMPs 2, 6, 9, and 14 and using that information for conducting the baseline survey.

B.2 Task List and Schedule

Task 1. Finalize Survey Design. In order to design a survey and sampling approach to meet the objectives of the baseline survey, four steps are necessary. The first step is to review the survey objectives closely with the District. The second step is to clearly determine the types of detailed information desired for the baseline survey. The third step is to specify the method for data collection

that is appropriate for the selected customer groups in order to obtain the desired data parameters. The fourth step is to prepare a final survey design document that clearly specifies the goals, objectives, methods, costs and schedule of the baseline survey.

Task 2. Develop Implementation Plan. Upon approval of the final survey design, the project team will prepare an implementation plan, which includes a description of all the logistical aspects of preparing for and implementing the baseline survey data collection activities. The project team will develop a sampling approach tailored to available customer information to select a target number of accounts for surveys. The design of site survey questionnaires will be crucial to the success of the baseline survey. For the implementation of site surveys, local area residents will be hired for surveyor positions. The recruitment and training procedures will be documented in the implementation plan.

Task 3. Conduct Site Surveys and Promote Incentives. For the purpose of this proposal, it is anticipated that approximately 500 residential, 100 CII, 200 LL, and 50 Ag site surveys will be conducted. The implementation plan will be followed with respect to program announcements, scheduling appointments, conducting site visits, and conducting follow-up quality assurance activities, as necessary. At each visited site, the site survey questionnaire will be completed. There will be indoor and outdoor components to the site survey.

Task 4. Conduct Nonresidential Data Logging/Incentives. Flow trace data will be collected from a representative sample chosen from the CII, LL and Ag sites that participated in the site surveys of Task 3. The goal of this data collection effort will be to collect between one and two weeks of continuous data which can be analyzed and disaggregated into indoor, outdoor and continuous use (such as leaks) as well as any other specific end uses which can be discerned.

Task 5. Develop Database. Four master databases will be developed (one each for residential, CII, LL, and Ag). Data from the surveys will be downloaded into the corresponding database. Each will include (1) relevant customer account information, (2) water meter reading dates and quantities for the most recent 12 month period, (3) site survey questionnaire results, (4) water and wastewater prices during the specified time period, (5) weather conditions during the specified time period, and (6) data logging results for nonresidential customers.

Task 6. Conduct Data Analysis and Water Use Modeling. Given site characteristics from both the site surveys and the data logging, two water use models will be developed with separate submodels for the customer groups. The primary model will examine the results of the site survey with customer water billing data. Profiles of water use for each specified class of nonresidential customers will be developed, including consumption range, seasonal load factors and variation patterns. Benchmarks in the end uses will be identified and the existing conservation potential for each customer class will be assessed.

Task 7. Prepare Project Report. The report will document (1) the development of the survey and sampling approach, (2) the development of the survey instruments, (3) the site survey results for the residential, CII, LL, and Ag customer groups, (4) the data logging, and (5) database analysis, model development, and model application.

Schedule

The project timeline is shown on Figure B-1. It is assumed that the project will be initiated before July 1, 2002. Table B-1 presents a quarterly expenditure projection.

FIGURE B-1. PROJECT TIMELINE

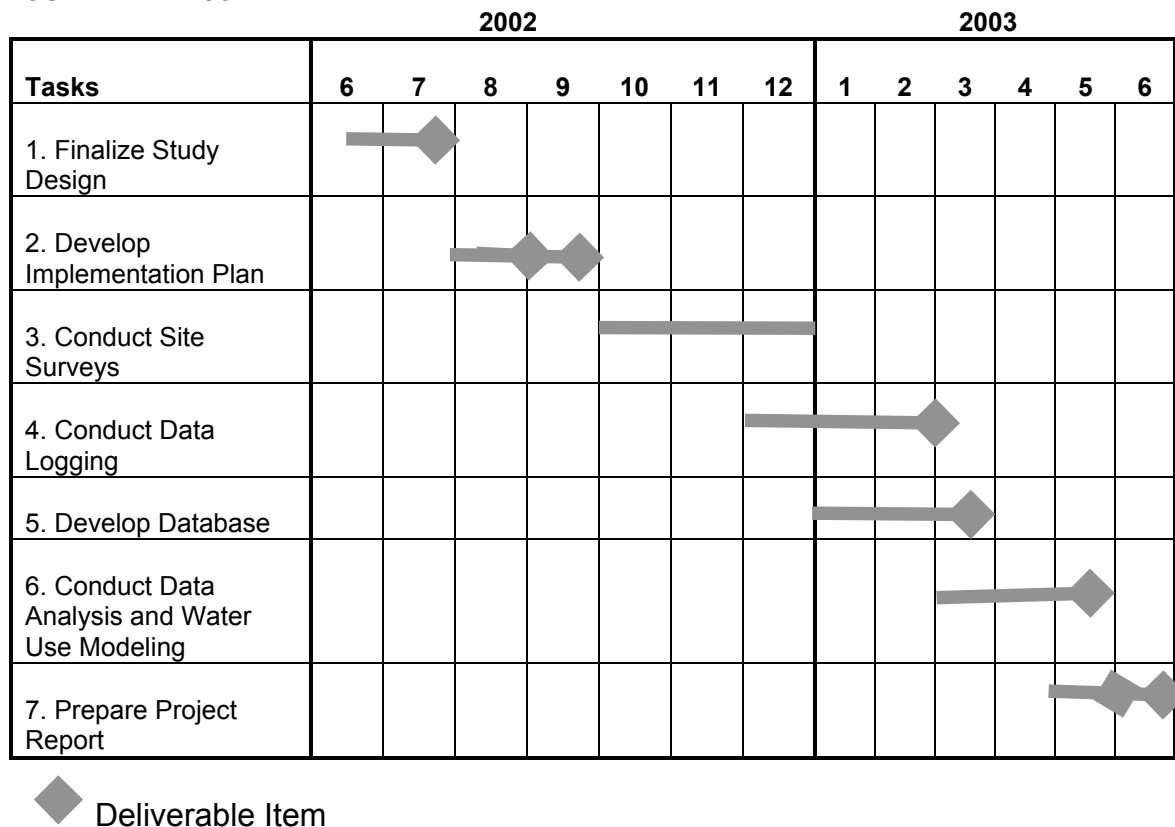


TABLE B-1. QUARTERLY EXPENDITURE PROJECTION

Quarter	Months	Expenditure
1	June-September	\$158,493
2	October-December	\$183,421
3	January-March	\$102,416
4	April-June	\$189,868
Total		\$634,198

B.3 Monitoring and Assessment

Monthly progress meetings will be held to discuss project status and results. The project management team will compare the results of the work to the project objectives to make sure that the project remains on target to deliver the desired objectives. Also, the project budget and schedule will be reviewed and corrective actions implemented if budget and/or schedule problems are identified. Once validated survey results are available, they will be made public and disseminated through the District's public outreach program including their web site and public meetings. Summaries of the project results will be provided to the eleven water retail agencies within the District so that these agencies can also inform their customers of the survey results and benefits in customers' mailings, bulletins, web sites, and other avenues.

C. Qualifications of the Applicants and Cooperators.

Qualifications

This section describes the qualifications of the applicants, cooperators, and establishment of partnerships.

C.1 Resumes

The project managers for this project are Hossein Ashktorab and Karen Morvay. Appendix II contains their resumes.

Hossein Ashktorab is the Water Conservation and Recycling Unit Manager for the District. Mr. Ashktorab has worked for the District for three years developing and managing water conservation programs for agriculture and large landscape water users. He has a Ph.D. in Soil Science and extensive experience applying his knowledge of plant-soil-water relationships to water conservation programs for water agencies, cities, counties, and private companies.

Karen Morvay has worked for the District for nearly three years and currently manages projects dealing with water conservation. Ms. Morvay has a M.S. in Environmental Studies and a B.A. in Political Science. She has experience in community outreach for recycling and water conservation programs.

C.2 External Cooperators

The primary local water retailers within the District, the City of San Jose, San Jose Water Company, City of Santa Clara, and City of Sunnyvale, represent 72% of the District's total demand. These retailers are aware of this project and will provide background information, customer information and water use data to the project team. Initial briefing meetings have been held with the retailers that provide an overview of the District's proposed conservation efforts.

C.3 Partnerships

Local water retailers have been an integral part of the District's water conservation program for many years. They have pledged their continued participation for this and other regional water use efficiency programs in the Santa Clara Valley. Without the cooperation of retail water suppliers, this baseline survey cannot be conducted.

D. Benefits and Costs.

D.1 Budget Summary and Breakdown

Table 1 in Appendix III presents a detailed estimated budget that includes salaries and wages, fringe benefits, supplies, equipment, services and consultants, travel and other direct costs. The table breaks down the estimated costs between the District provided services and the services of the consultant that will be conducting the project.

The total cost of the project is \$634,198. The District is requesting a 50% funding share or \$317,099 from DWR WUE funding grants. The remaining fifty percent will be provided by the District through in-kind services and capital outlay.

The District's FY01/02 and FY02/03 budgets can not accommodate the full cost of this project. Several water quality project priorities prevent full availability of funds for water use efficiency at this time. Without 50% share funding, the District can not conduct the project, and implementation of its regional water use efficiency program will be delayed for several years.

Budget Justification

The budget estimate was prepared by Brown and Caldwell, a professional water engineering firm with extensive experience in managing and conducting water conservation projects like this water use efficiency baseline survey. Brown and Caldwell is an approved consultant included in the California Urban Water Conservation Council's list of qualified consultants for the Year 2001. The estimated costs were validated by comparing them to those incurred on similar studies including the water use baseline study for the City of San Jose conducted in 1999.

The number of site surveys assumed for this budget cost estimate is based on sample sizes used in similar studies. These sample sizes are approximate estimates that should be evaluated in greater detail during development of the sampling plan, which is described in Task 2, *Develop Implementation Plan*. The required number of site surveys should be based on a number of considerations such as survey objectives, survey methods, the desired level of confidence in survey results, the most efficient use of monetary resources, grouping of target populations, and statistical characteristics of the data being collected. Statistical methods that will be used to analyze survey results must be selected prior to determination of final sample sizes.

D2. Cost-Sharing

The applicant cost share is based on the split between applicant benefits and CALFED benefits. The applicant cost share shall be obligated during the period of performance. The applicant cost share shall be met during each 12-month budget period.

The proposal shall identify other funding commitments, the status of these commitments (tentative approval, contract, etc.), source, and any cost-sharing requirements. Successful proposals that commit cost sharing funds shall have the commitment of those funds within 30 days of notification of approval. If an applicant fails to secure the cost share funds identified in the proposal, and as a result has insufficient funds to complete the project, DWR has the option to amend or terminate the contract.

D3. Benefit Summary and Breakdown

a) Quantifiable Project Outcomes and Benefits. We expect to see increased implementation of certain BMPs as a result of the public outreach aspect of this project. Specifically, residential and non-residential will receive water surveys (BMP 1, BMP 5, BMP 9), all surveyed customers will receive residential plumbing retrofit kits (BMP 2), information on both the District's high efficiency washing machine rebate program (BMP 6), and the residential Ultra Low Flush Toilet replacement program (BMP 14). BMPs 1, 2, 6, and 14 relate to the residential sector where we anticipate surveying 500 customers, BMP 9 relates to the CII sector where we anticipate surveying 100 customers, and BMP 5 relates to the LL sector where we anticipate surveying 200 customers. Assuming that 10% of the residential customers, 20% of the CII customers, and 30% of the LL

customers are not participating in these programs and will start as a result of the project, we can estimate that 282 acre-feet of water will be saved by this project.

b) Non-quantifiable Project Outcomes and Benefits. There are many project benefits that can not be effectively quantified at this point in time. These are:

- 1) Implementation of BMP 7 – Public Information Programs which are a direct result of this public survey and dissemination of its results.
- 2) Implementation of BMP 9 – Conservation Programs for Commercial, Industrial and Institutional (CII) Accounts. Direct contact will be made with 100 CII customers as part of the survey. These customers will be educated and trained in water use efficiency opportunities specific to their businesses.

This project will generate much needed demand profile data for CII customers. This data will augment the soon to be published data from a recent AWWARF Commercial End Use Study (to be published soon) that profiles demand patterns and uses for various types of commercial water users. This data will not only be beneficial for District retail agencies, but for other water agencies in California and the United States. The value of the data will be to enable the District to identify water use reduction targets for various CII users in their service area, and subsequently structure their commercial BMPs to cost-effectively address targeted water use reductions.

- 3) There is ample opportunity to improve large landscape (LL) water use efficiency within the District. There are approximately 50,000 LL accounts within the District, but District staff have only been able to visit 1,200 LL accounts since the inception of their water conservation program. Just working with these 1,200 accounts, has cost the District \$150,000 a year. The proposed Water Use Efficiency Baseline Survey will provide the District the information necessary to dramatically improve the cost-effectiveness of future LL water use efficiency efforts and to get much more return (savings per acre-feet per year) for their dollar.
- 4) Improved Bay Delta ecosystem through the reduction in water diversions by the District from the Bay Delta during the dry summer period. The District up to 90% of its water from the Delta. In dry years, increased water use efficiency will have a direct benefit to more “environmental water” for the Delta, when it will need it most.
- 5) Improved local watershed ecosystem by decreased diversions from local creeks and reservoirs thereby benefiting in-stream uses like salmon spawning. This benefit supports the Santa Clara Basin Watershed Management Initiative (WMI) (Appendix IV).
- 6) Improved water quality by increased water use efficiency of large landscape and agricultural users that will lead to decreased non-point source pollution (excess irrigation runoff) that contains fertilizers and pesticides. This benefit supports the Santa Clara Basin Watershed Management Initiative (WMI) (Appendix IV).
- 7) Improved urban creek water quality by reduced urban non-point source pollution (excess irrigation runoff). This benefit supports the Santa Clara Basin Watershed Management Initiative (WMI) (Appendix IV).
- 8) Sustained economic health of the critical Silicon Valley business community. Water supply reliability is a cornerstone of continued growth and vitality of this strong economic engine of the

State of California. Increased water conservation is one of the four primary components of the District's Integrated Water Resources Plan.

- 9) Statewide benefits resulting from the information gained regarding specific CII water use data for the high tech industry. There is currently a limited amount of information regarding high tech industry water use.
- 10) Energy savings as a result of less water pumped into the system and less water being heated due to installation of low flow showerheads and clothes washers and indoor leak reduction.
- 11) Economic savings to customers from less water used as a result of leak repairs and installation of water saving appliances and devices.
- 12) Customer attitudes towards water conservation are revealed, enabling the District to more effectively reach customers on this subject.
- 13) A more effective water conservation program by identifying cost-effective and proven savings targets or methods where there is the need for additional water conservation.
- 14) Relief for District area infrastructure by avoiding upsizing infrastructure to meet future peak demands through demand management. Water use efficiency also decreases wastewater production resulting in less sewer infrastructure needs. This is of particular importance to San Jose area given their critical water quality situation in the South SF Bay.

D4. Assessment of Costs and Benefits

This section includes an assessment that summarizes the costs and benefits of the proposed project. The major analysis assumptions are listed and explained. This section also shows the present value of the quantified costs and benefits for the applicant and CALFED and summarizes non-quantified costs and benefits to the applicant and CALFED. All quantified benefits and costs are expressed in year 2000 dollars using a six percent discount rate. A list of all major assumptions for the analysis of the quantifiable cost and benefits is as follows:

1. Average value of conserved water in District is \$500/ac-ft.
2. Single-family water usage = 193 gpd/unit (69% is outdoor use). Based on the 1997 City of San Jose Water Use and Conservation Baseline Study.
3. Residential water surveys decrease indoor water use through leak detection, not including toilet leaks by 0.5 gpd per residence. Based in A & N Technical Services report (2000, page 2-20) (12.4 gpd per household repair; 4 percent of households audited have leaks). Residential water surveys decrease outdoor water use by 10% based on the MOU estimate (page 17).
4. Indoor water savings due to residential water surveys = 13 gpd/unit. Based on an estimated average of 1.3 showers, 2 toilets, and 3 faucets per residence. Water savings from one low-flow showerhead = 5.5 gpd, Water savings from one faucet aerator = 1.5 gpd; Water savings from one toilet flapper = 8 gpd; assume 8 percent of toilets leak. Savings based on A & N Technical Services report (2000, page 2-16).
5. Water savings from ULFTs are 40 gpd/unit. Estimate based on the MOU, Exhibit 6, Table 1.

6. Water savings from LL survey is 0.7 ac-ft/yr per survey. Water use prior to the survey is 4.7 ft per year per LL. Irrigation allocation is equal to 100 percent of local evapotranspiration (ET_o), and the MOU estimates that surveys will reduce water usage by 15 percent. The local ET_o was determined to be 49 in/year (based on California Irrigation Management Information System data) and multiplied by 1.15 to obtain 57 inches (4.7ft) per year for current water use. (Most conservative approach for economic analysis). LL landscape areas are assumed to be an average of 1 acre in size.
7. The average annual water savings resulting from a CII water survey is 0.83 acre-feet per account. Based on the A & N Technical Services report (2000, page 2-35).
8. The life span of all surveys is four years. Based on the A & N Technical Services report (2000, page 2-16, 20) which gives life spans for various components of a water survey and various types of water surveys. Four years was selected as a reasonable average value based on that information. The life span of the new ULFTs is 20 years. Based on the MOU, page 70.
9. 50 residential customers, 60 LL customers, and 20 CII customers will accept water conservation incentives.

Table D-1 summarizes the quantified cost and benefits to the District and the DWR WUE Program. A summary of the non-quantified costs and benefits to the District, DWR WUE Program, and District customers are compiled in Table D-2.

TABLE D-1. SUMMARY OF QUANTIFIED COSTS AND BENEFITS

Agency	Costs, dollars	Benefits, dollars	Water, ac-ft
District	317,099	115,685	282
CALFED	317,099	None	282

TABLE D-2. SUMMARY OF THE NON-QUANTIFIED COSTS AND BENEFITS

Agency	Non-quantified costs	Non-quantified benefits
District	<ul style="list-style-type: none"> Possibly less revenue – due to declined customer use. 	<ul style="list-style-type: none"> More efficient water use. Knowledge of District baseline conditions
CALFED	None	<ul style="list-style-type: none"> More efficient water use. More water for Bay-Delta.
District customer	<ul style="list-style-type: none"> Possible irrigation improvements. More effort to follow water conservation methods. 	<ul style="list-style-type: none"> Decreased water bill. Decreased electricity bill.

E. Outreach, Community Involvement and Acceptance

This section describes outreach efforts to contact and involve participation from people in disadvantaged communities, the training, employment, and capacity building potential of the project, and the plan for disseminating information on the results of the project.

E.1 Outreach Efforts

The essence of this project is public outreach to the community. Individual contact will be made with hundreds of customers to promote and reinforce water use efficiency and to provide incentives to conserve water. Disadvantaged community members will be contacted as part of the surveys. The surveys will be designed to target this audience. In particular, the Santa Clara County rural population is relatively disadvantaged and agricultural customers are a particular emphasis of this project.

The outreach program to agricultural customers will promote use of the District's On-Farm Irrigation Evaluation Mobile Lab. This lab assesses irrigation systems and recommends improvements for water and energy savings (Appendix V).

E.2 Training, Employment, Capacity Building Potential

Local residents will be recruited and trained to conduct the surveys. Bilingual staff will be available to train and serve the customer base. Also, a key benefit of the project is the training of surveyed customers in water use efficiency. Surveyors will be proficient in communicating the benefits of water use efficiency with community members.

E.3 Spread of Information and Promotion of Project Results

Information on the results of this project will be disseminated through the District's public outreach program. The District operates an extensive public information program and associated schools program, which provide materials, speakers, and outreach activities to the general public. The District employs a professional staff of 10 employees to provide outreach related to water conservation, urban runoff pollution, water recycling, watershed and flood protection and water quality. In addition, Water Conservation Unit staff conducts targeted outreach tailored to individual conservation programs.

Outreach activities will include publications and Web site development, public meetings, District participation at community events, multi-media campaigns, inter-agency partnerships, corporate environmental fairs, professional trade shows, water conservation workshops and seminars and a Speaker's Bureau.

Summaries of the results and benefits of this project will be developed by District staff and made available to the eleven local water retailing agencies for dissemination to their respective customer base. Inserts will be included in billing mailer inserts, newsletters, and agency web sites.

E.4 Letters of Notification

Appendix I contains a copy of the letter sent to the District's primary water retailers notifying them of this proposal.

APPENDIX I

Notice Letter

February 19, 2002

Dear Water Retailer,

The Santa Clara Valley Water District's Water Use Efficiency Unit is in the process of applying for two Proposition 13 Urban Water Conservation Program grants (Water Softener Rebate and Dedicated Irrigation Meters), one Proposition 13 Agricultural Feasibility Study Program grant (Using Recycled Water for Irrigation), and one Department of Water Resources Water Use Efficiency Program grant (Baseline Study).

The goal of the Proposition 13 Grant Programs and the DWR Water Use Efficiency Grant Program is to accelerate the implementation of cost-effective actions to reduce irrecoverable water losses, improve water quality, and attain environmental benefits through water use efficiency measures and to document those benefits. The grants that the District is applying for are designed to help achieve this goal.

The **Baseline Study grant proposal** is designed to collect and analyze data on water end-users in both the residential (single- and multi-family dwellings) and non-residential (Commercial, Industrial, Institutional account surveys, and landscape surveys of multi-family dwellings and dedicated landscape accounts) sectors of the District and concurrently distribute water savings devices to survey participants.

This project will deliver the following benefits:

- determine the types and saturation of water-using hardware that exists for selected types of customers;
- establish a baseline from which future water savings are measured for both residential and non-residential sectors (incorporating Water Use Baseline Studies conducted by the City of San Jose);
- determine customer attitudes and awareness for water conservation;
- determine areas where conservation program would be most effective; and
- introduce water saving devices and programs to survey participants.

The Pilot **Irrigation Meter Conversion Program** will target 10 to 20 sites (depending on the cost per site). The primary focus on this program will be within the City of Palo Alto as well as the City of Mountain View (the District is pursuing cost sharing efforts with these agencies). The expected cost will range between \$3,000-7,000 per site.

Irrigation meter installation will help the District and its retailers meet BMP #5 of the MOU Regarding Urban Water Conservation in California. Many customers are charged a sewer charge by examining their water bills. If mixed meters are converted it will result in less water being used on the "indoor only" meter and a customer's sewer charges will decrease. The District and the participating cities will also be better able to respond to landscape watering programs developed during the drought.

The program will target mixed use meters at sites with 3 acres or more of landscaping. Potential sites include schools and city parks.

The **Water Softener Retrofit Program** will involve the replacement of up to 100 functional timer-operated residential water softeners with newer models that are more salt and water efficient. New water softeners are more salt efficient and operate only on demand.

Households in San Jose and the south county with older, timer operated water softeners will be targeted. Since 1998, the District has compiled a database that details the water fixtures in the home as part of its Water Wise House Call Program. Additionally, District staff will work with local water softener installers to promote this pilot program to their customers.

Since little is known about the water savings potential for replacing older timer operated water softeners, the District proposes to measure water use before and after the installation of the more efficient machines. Data loggers will be used to determine the water used by the older water softeners. The salt use is better documented, but more difficult to individually monitor, so it will not be necessary to evaluate.

The District expects to spend approximately \$50,000 and hopes to get \$50,000 in matching funds from this grant. Since the costs will vary by machine, the customer may have a small co-payment.

The final grant proposal seeks funding to study the feasibility of using **recycled water for agricultural irrigation in the southern Santa Clara Valley**. The salt and chemical content of recycled water, left untreated, will degrade water quality in the aquifer and increase the erodibility of the Valley soils. Both are important because the aquifer supplies potable water and the Valley is part of a watershed draining to the Monterey Bay National Marine Sanctuary. This study will determine the efficacy of the soil in denaturing man made chemicals, and will determine the relationship between the water's sodium concentration and soil erodibility. The information obtained in the first part of the study will reveal the extent and nature of advanced water treatment that will be required. Information from the second part will likewise elucidate treatment requirements, and will also identify soils which should not be irrigated with recycled water. The combination of treatment requirements and potentially irrigable area will determine the feasibility of the capital investment required to use this water.

Because these grants provide a measurable benefit in terms of annual water savings to your service area, the District is requesting your agency's support. We are seeking a Letter of Support by Wednesday, February 27^h, 5:00 p.m. Included with this letter is a template of the support letter for you to use if needed.

If you have any questions, please call me at (408) 265-2607, ext. 2291, or Karen Morvay at ext.2707.

Thank you very much,

Hosseini Ashktorab, Ph.D.
Unit Manager
Water Use Efficiency Unit

APPENDIX II

Resumes

KAREN MORVAY

Santa Clara Valley Water District

EDUCATION

May 1994 Master of Science in Environmental Studies	San Jose State University	San Jose, CA
June 1990 Bachelor of Arts in Political Science	University of California at Santa Cruz	Santa Cruz, CA

WORK EXPERIENCE

September 2000 to Present Water Conservation Specialist	Santa Clara Valley Water District	San Jose, CA
1998 to 2000 Project Assistant	Santa Clara Valley Water District	San Jose, CA
1997 to 1998 Public Affairs Manager	GreenTeam of San Jose	San Jose, CA
1994 to 1997 Hazardous Materials Technician	Santa Clara County	San Jose, CA
1993 to 1994 Recycling Program Assistant	City of Mountain View	Mtn.View, CA
1990 to 1991 Recycling Program Intern	City of Seattle, Solid Waste Utility	Seattle, WA
1989 to 1990 Water Conservation Coordinator	University of California at Santa Cruz	Santa Cruz, CA

CERTIFICATES

- 1994 OSHA 40-hour Hazardous Waste Management Certificate
- 2000 American Red Cross Advanced Adult CPR and First Aid
- 2002 American Water Works Association, Water Conservation Practitioner

HOSSEIN ASHKTORAB
Santa Clara Valley Water District

EDUCATION:

Ph.D., University of California, Davis, 1989. Plant, Soil and Water Science.
Master of Science, California State University, Chico, 1981. Irrigation
Bachelor of Science, University of Mazandaran, 1979. Agriculture Engineering.

PROFESIONAL EXPERIENCE:

Unit Manager, Water Use Efficiency Unit, Santa Clara Valley Water District, Jan. 2001 – Present

Responsible for managing the District Water Use Efficiency Unit (WUE) providing technical direction, coordinating its activities with other District Units, and external stakeholders including 13 water retailers. The water conservation program is a long-term commitment of the District, which provides the highest quality programs and educational opportunities to residents and businesses in Santa Clara County.

Managing the implementation of all 14 BMPs required by the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU). In addition, Managing the adopted Water Conservation Plan (including agriculture water conservation program) to comply with US Bureau of Reclamation mandate as required by the Central Valley Project Improvement Act (CVPIA).

Manage and participate in the development, implementation and administration of the water conservation and water recycling programs with more than \$9 million annual budget in Santa Clara County.

Develop partnership with local and regional cities including various water conservation programs with City of San Jose with more than \$3 million cost-sharing budget as well as cost-sharing agreement with six other agencies in Northern California for residential efficient clothes washing machine.

Participate and engage in the recycled water partnership such as South Bay Water Recycling cost sharing agreement for the amount of \$50 million projects in the Santa Clara County.

Participate and coordinate with local, regional and statewide water conservation and recycling organizations. Member of CUWA water conservation committee and CUWCC steering, plenary, Program committees and several subcommittees.

Water Conservation Specialist, Water Use Efficiency Unit, Santa Clara Valley Water District 1/97 to 1/01

Developed and managed water conservation programs including programs for agricultural and large landscape water users.

Technical staff to District Landscape Water Advisory Committee, and District Agriculture Water Advisory Committee.

Responsible for implementation of CALFED grants for the District Agricultural and Urban Water Use efficiency programs. Developed proposals and received grant fund for two District's water recycling projects from Proposition 13 grant funding.

In partnership with the Santa Clara Farm Bureau, UC Cooperation Extension, Department of Agriculture, Department of Water Resources, and Santa Clara County Natural Resource Conservation Service, Developed and conducted nine Agricultural Irrigation and Nutrient Management seminars for the County growers and interested groups

Associate Land Water Use Analyst, California Department of Water Resources, 12/86 to 9/93

Technical coordinator for the Assembly Bill 325 Task Force Advisory Committee in 1991 and 1992 and facilitated the development of the State Landscape Water Conservation Model Ordinance. Assisted water agencies, cities and counties to develop and implement landscape water conservation guidelines and ordinances.

As a member of the State Water Conservation Advisory Committee, participated in the development of the Best Management Practices (BMPs) in water conservation.

Participated in the negotiation with the agricultural stakeholders and U.S. Bureau of Reclamation for the State Department of Water Resources Drought Water Bank. Developed a new method using nonlinear regression model to estimate crop water requirement values for major crops in the Delta's agricultural area which was the bases for the negotiation of the irrigation water use.

Supported agencies in the development of their water management plan, implementation and evaluation of various water conservation programs such as the ULF toilet replacement, toilet displacement devices, low flow shower heads and outdoor water audits.

Member of the 1989 and 1992 Xeriscape Conferences Steering Committee and chaired the Award Subcommittee meetings.

Irrigation Consultant, Chico, California, 2/80 to 9/81

Designed irrigation system and developed irrigation management plan for various farmers including a large fruit orchard located in Chico.

RESEARCH AND TEACHING EXPERIENCE:

Assistant Professor, Dept. of Irrigation Eng., Shiraz University, 9/93 to 6/96

Lectured on urban water use and conservation, crop water requirements, evapotranspiration and irrigation systems and design. Directed related laboratories and field trips.

Research Assistant professor, University of California, Davis, 6/96 to 12/97

Crop water requirement and water management. 3-D Aerodynamic latent heat flux research studies
Field research study on irrigation system and evaluation.

Research Assistant, University of California, Davis, 9/81 to 5/82 and 4/83 to 12/86

Field laboratory investigations related to the separation of soil evaporation and transpiration of tomato plants. Studied the evaporation rate under different plant growth stages and soil moisture contents using highly sensitive Lysimeter. Collected and interpreted weather station data at U.C. Davis field station. Worked extensively with instruments, soil moisture and particle size analysis. Engaged in field and greenhouse studies related to root elongation, density, and plant response under different drip irrigation regimes and fertilizer applications

CERTIFICATION:

Irrigation Systems Evaluation; Landscape Irrigation Master Auditor

PROFESSIONAL MEMBERSHIP:

American Society of Civil Engineers; Irrigation Association; American Water Works Association; WateReuse Association

APPENDIX III

Cost Estimate

(Costs include salaries and wages, fringe benefits, supplies, equipment, services, equipment, travel and other direct costs)

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Table 2. SCVWD

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